

## SECTION 6.2

### SAMPLING DESIGN

#### – CAPTURE FISHERY/ FISHING LANDING SURVEY

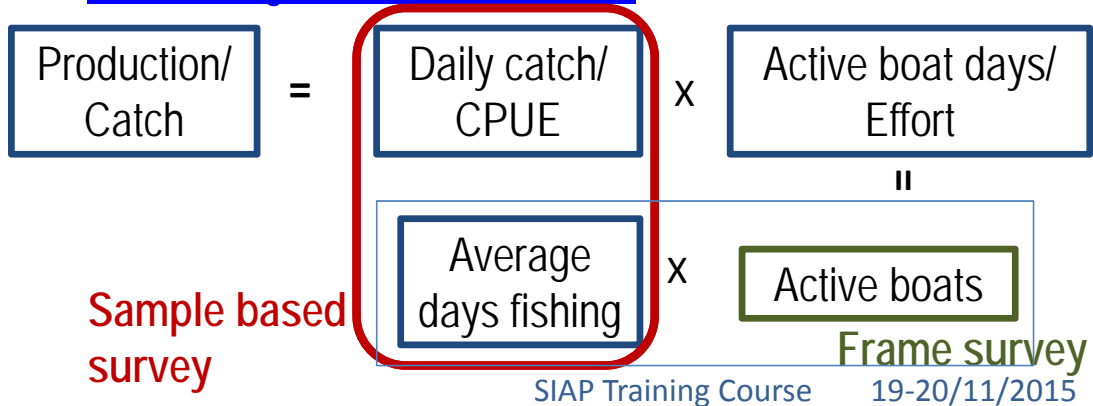
Sachiko TSUJI, FIPS, FAO

### What is unique in fishing?

- Invisible
  - Live fish in water not visible/ stocks not visible
  - Location/ quantity unknown
- Dynamic
  - Fish moves – no respect for country boundary
  - Fishers move
  - Need detailed monitoring both time and space
- Hunting
  - Rely on natural productivity
  - Fishery management = Fish resource management
  - Dual purposes in production statistics
    - Food production/ economic contribution
    - Removal from natural resources

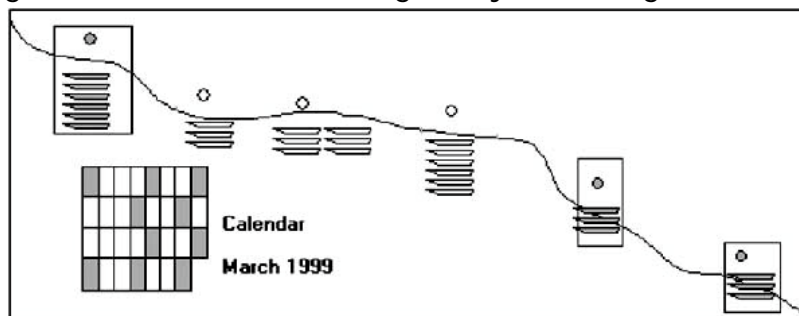
## Sample based survey at landing sites

- Well-established standard methods
  - FAO Technical Paper 382  
[www.fao.org/docrep/003/X2465E/X2465E00.HTM](http://www.fao.org/docrep/003/X2465E/X2465E00.HTM)
  - FAO Fisheries and Aquaculture Circular C1091  
[www.fao.org/3/a-i3639e/index.html](http://www.fao.org/3/a-i3639e/index.html)



## Sample based survey at landing

- Stratification
  - Gear/ boat size
  - Time/ landing sites – based on homogeneity of fishing operation



- Species composition, size composition
  - Biological sampling > occurrence > raising

# What information need to collect?

Impacts of fisheries operations to natural resources/ environment:

- Status and changes of operations
- Status and changes of biological environment (targeted and non-targeted components)
- Status and changes of physical environments **Fisheries specific**

Contribution of fisheries sector:

- Food security
- Social aspects (number of people supported by fishery sector)
- Economic aspect (contribution to national GDP)

Impacts from other sectors/ environment:

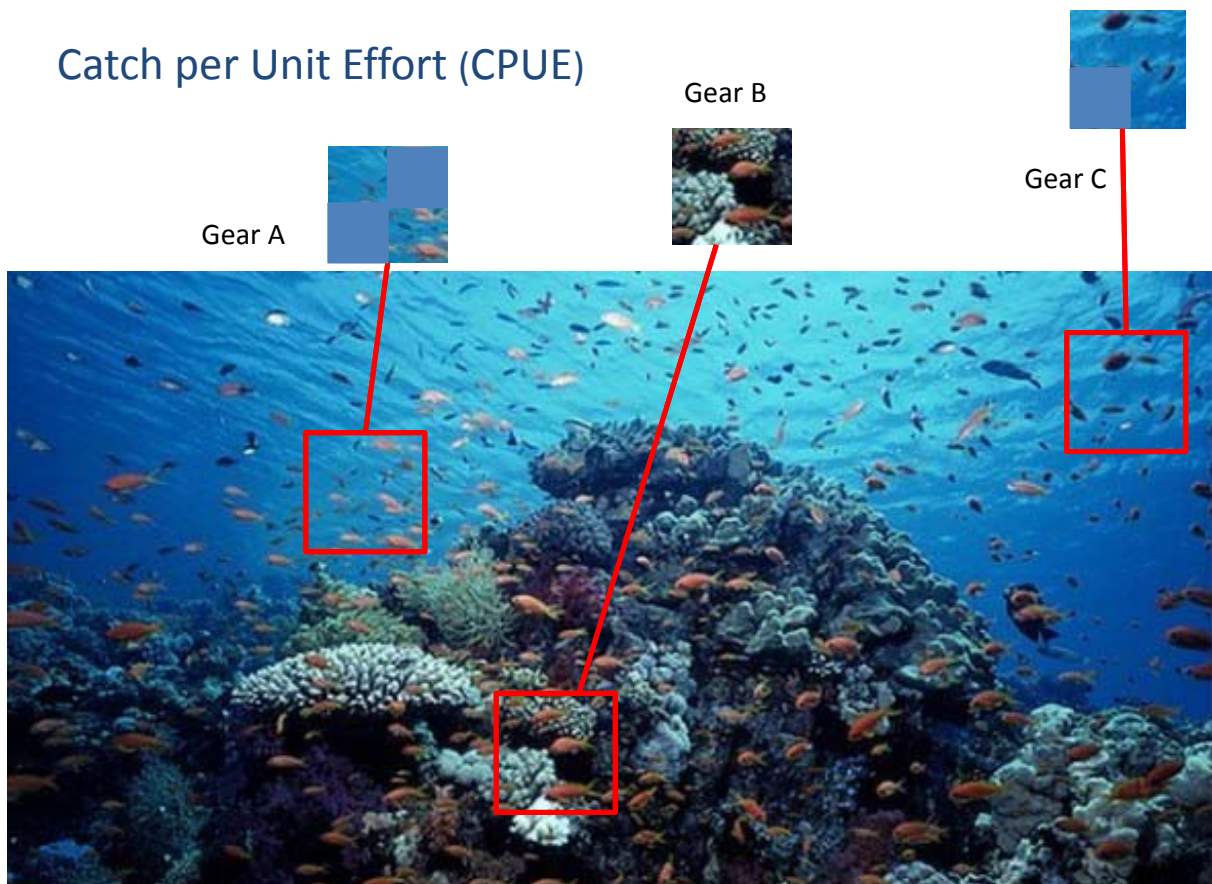
- Interaction with other sectors (e.g. inputs, outputs, competitions with aquaculture and agriculture)
- Shift and changes of environments supporting fisheries sector (e.g. habitat deterioration, climate changes impacts)

**Global Strategy**

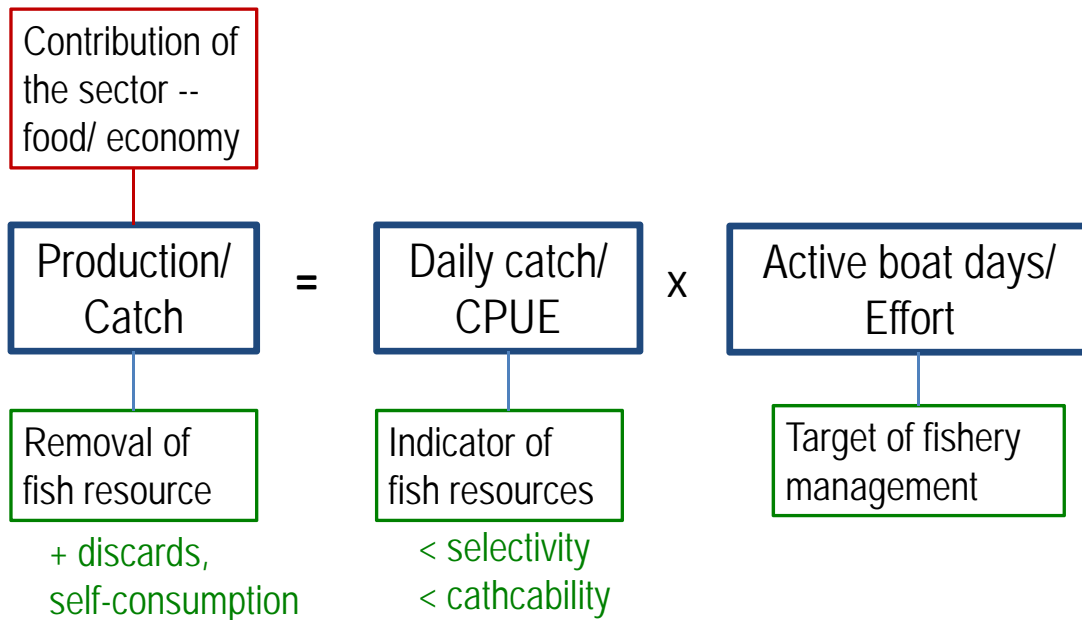
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## Catch per Unit Effort (CPUE)

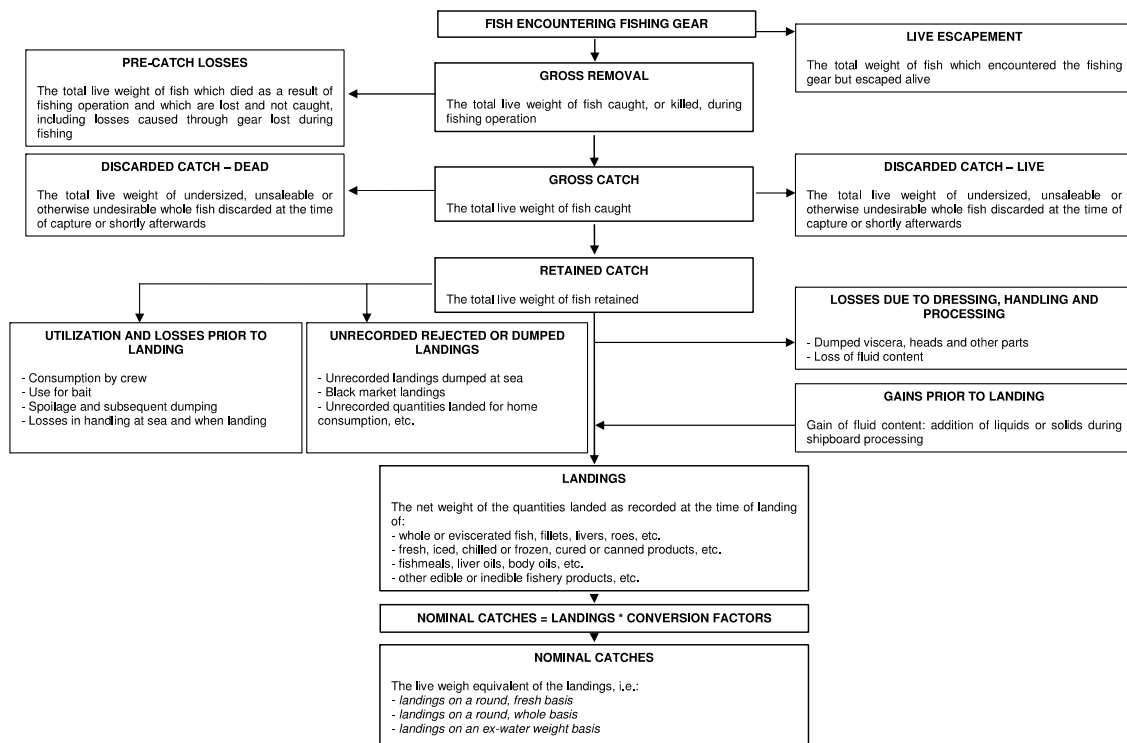


# Dual purposes of observed statistics



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## CATCH CONCEPTS: DIAGRAMMATIC PRESENTATION



# Sample based survey at landing

## Weakness

- Only good for landed catch
  - Filtered with commercial (landing) component
  - No good for monitoring subsistent use, valueless discards
- No direct link to social/ household aspects << frame (census) survey

## Comparison with other surveys

- Logbook
- Market survey



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# Tools for data collection

## Impacts of fishery;

	Operations	Target resources	Non-target organisms	Physical environment
Sampling at landings	Yes; partial	Yes; indirect	Generally no;	No;
Logbook	Yes; subjective	Yes; subjective; indirect	Generally no;	No;
VMS	Yes;	No;	No;	No;
Observers	Due to design; generally no;	Due to design; generally no;	Potential;	Potential but limited
Fishery surveys	No;	Due to design;	Due to design;	Due to design
Fishery census	Yes; partial in time; indirect	Yes; partial in time; indirect	No;	No;
Consumption survey	No;	Potential; partial in time; indirect	No;	No;

## Tools for data collection

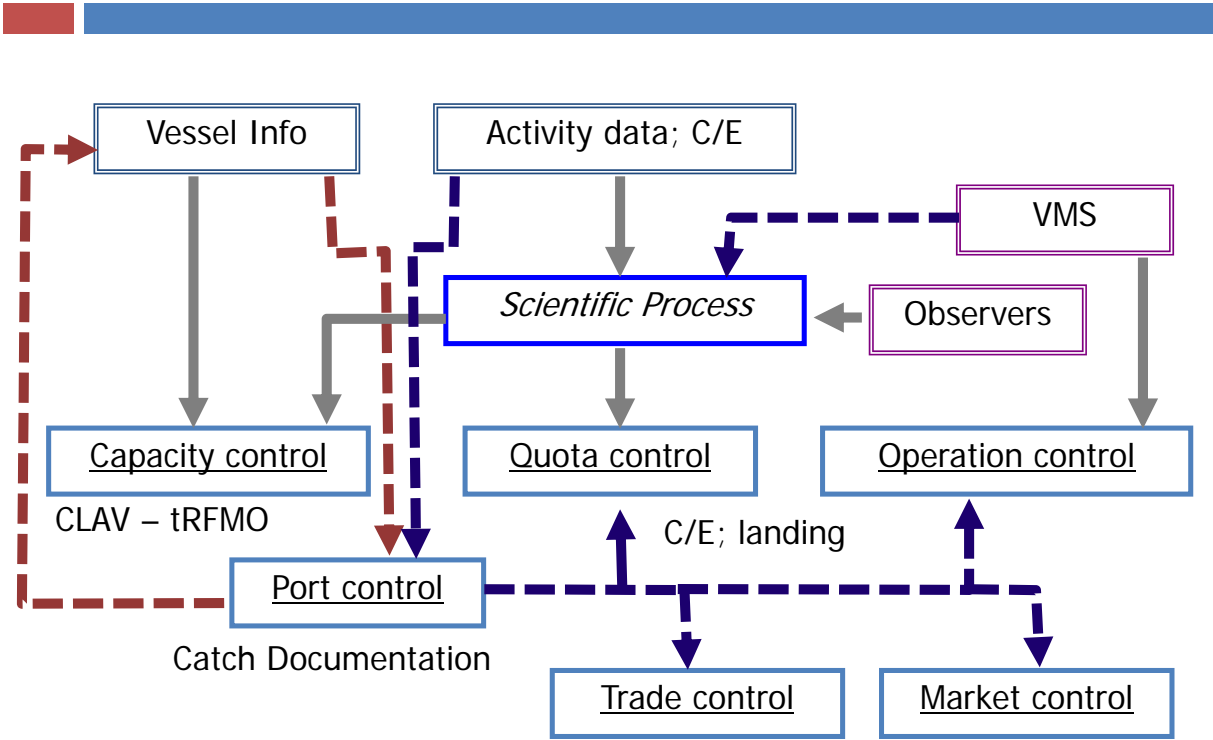
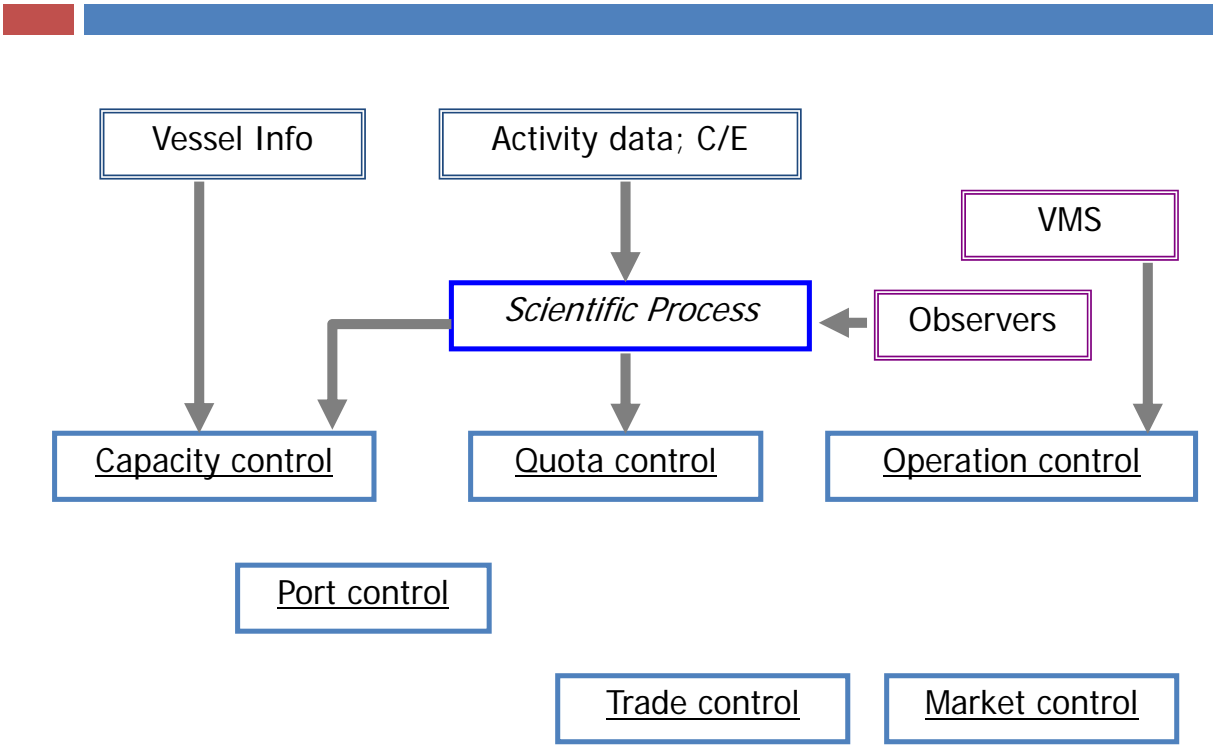
### *Contribution of fishery sector;*

	Food security	Social contribution	Economic (GDP) contribution
Sampling at landing	Yes; partial input	Potential; not current	Potential; not current
Logbook	Yes; partial input	Generally no;	Potential; not current
Market surveys	Generally no;	Yes; subjective	Yes; but scarce
Trade data	Yes; partial input	Generally no;	Yes; partial input
Population census	Yes; partial input; partial in time	Potential; partial in time; not current	Potential; partial input; partial in time
Fishery census	Yes; partial in time;	Yes; partial in time;	Yes; partial in time;
Rural surveys	Generally no;	Potential; partial in time; not current	Potential; partial in time; not current
Consumption surveys	Yes; direct; partial in time	Generally no;	Generally no;

## Tools for data collection

### *Impact from other sectors;*

	Interaction with other sectors	Shift of basis
Market surveys	Potential; not current	Generally no;
Trade data	Potential; not current	Generally no;
Population census	Potential; not current; partial in time	Generally no;
Rural surveys	Potential; not current; partial in time	Generally no;
Consumption surveys	Potential; not current; partial in time	Generally no;
Other sectors' surveys (aquaculture, agriculture, water use etc)	Potential; due to design	Due to design
Independent research, survey	Due to design	Due to design
GPS	Generally no;	Potential



## Group discussion:

- Country inputs -- Maldives
- Share country experiences of catch data collection and identify best practice
- List main problems encountered in the past

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- G1
  - Logbook (daily, reported every 15 d) + market survey – not reporting as requested; tax > under-reporting of catch; not easy to monitor operations (Maldives)
  - HH survey; market survey + possible logbook; (Samoa)
- G2
  - Data form for fishers and community, market interview, processing interview, detailed annual interview to company
  - Direct consumption – not to market – difficult to assess real landings; low, landing outside country, seasonal migration of fishers;
  - Not many fishery experts; data from interview at villages
- G3
  - Admin report (Bangladesh), fishery monthly survey (VN)
  - No food security indicator in fisheries
  - Indonesia – traditional landings sites belong to fishers and ask fishers group to collect data
  - Operation further from landing area, and then difficult to get production by type of fish by buckets
  - VN: difficult to update amount of fishing gears